IN THE CLAIMS:

Listing of the claims:

1. (Original) An apparatus for driving small volumes of fluid, the apparatus comprising:

a substrate;

a first array of electrically conductive electrodes formed on the substrate; and

a second array of electrically conductive electrodes formed on the substrate, the first and second array being interlaced and being arranged such that each of the electrodes in the second array has a width in a fluid driving direction which is greater than that of each of the electrodes in the first array and such that the first and second set electrodes are positioned so that each of the electrodes of the first set is not at a position equidistant from adjacent electrodes of the second set, wherein both of the arrays of electrodes have widths in the fluid flow direction and thickness selected such that, in use, by varying the peak value of an alternating drive voltage applied thereto the direction of flow of a fluid adjacent to the arrays of electrodes can be controlled.

2. (Original) The apparatus of claim 1, further comprising means for providing a variable alternating voltage to the first and second array of electrodes.

3. (Currently amended) The apparatus of claim 1 ~~or claim 2~~, wherein an insulator is provided over at least a portion of one or both of the electrode arrays.

4. (Currently amended) The apparatus of ~~any preceding~~ claim 1 arranged to drive fluid passing thereover in two opposite directions in order to provide a mixing effect.

5. (Currently amended) The apparatus of ~~any preceding~~ claim 1 further comprising a third set of electrodes having a width to that of the first set, interlaced with the second set of electrodes and separated from the first set by an insulator.

6. (Currently amended) An apparatus according to ~~any preceding~~ claim 1, in which the electrodes and substrate are formed as part of a CMOS process.

7. (Currently amended) An apparatus according to ~~any preceding~~ claim 1 configured to move elements, such as semiconductor components, within a fluid passing thereover

8. (Currently amended) An apparatus according to ~~any of~~ claims 1 ~~to 5~~ arranged to drive a micromachine.

9. (Currently amended) An apparatus according to ~~any of~~ claims 1 ~~to 5~~ arranged to be employed in a biochemical analysis process or drug manufacture process.

10. (Currently amended) A device for moving fluid by plug flow comprising two apparatus according to ~~any preceding~~ claim 1 facing one another and defining a cavity therebetween.

11. (Currently amended) A device for drawing fluids from two sources, mixing them and pumping them, the device comprising a first apparatus, a second apparatus and a third apparatus according to ~~any of~~ claims 1 ~~to 8~~; wherein the ~~a~~ second apparatus electrodes are ~~according to any of claims 1 to 8 and having its electrodes~~ arranged to be a mirror image of those of the first apparatus; and ~~wherein the~~ a third apparatus ~~according to any of claim 1 to 8~~ is positioned at the meeting point of the first and second apparatus.

12. (Currently amended) A diffusion reactant monitoring device comprising an apparatus according to ~~any of~~ claims 1 ~~to 6~~ which at least partially defines a diffusion reactant chamber and further comprising at least two supply ports and an outlet including an illuminating light source and a filtered optoelectrical detector.

13. (Original) A method apparatus for driving small volumes of fluid, the method comprising the steps of:

providing a substrate;

providing a first array of electrically conductive electrodes formed on the substrate and a second array of electrically conductive electrodes formed on the substrate, the first and second array being interlaced and being arranged such that each of the electrodes in the second array has a width in a fluid driving direction which, is greater than that of each of the electrodes in the first array and such that the first and second set electrodes are positioned so that each of the electrodes of the first set is not at a position equidistant from adjacent electrodes of the second set; and by varying the peak value of an alternating drive voltage applied thereto, controlling the direction of flow of a fluid adjacent to the arrays.

14. (Original) The method of claim 13, wherein the fluid is driven in two opposite directions in order to provide a mixing effect.

15. (Original) A method of monitoring a diffusion reactant, comprising the method of claim 14, and further comprising the step of providing fluids from at least two supply ports; and providing mixed fluid to an outlet including an illuminating light source and a filtered opto-electrical detector.